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ABSTRACT

For this study, a survey instrument was developed to obtain data on several phases of school facilities in Virginia. The instrument contained 26 separate items to which local school personnel were asked to respond. Survey items were grouped around three main parts of the study: capital improvement projects, maintenance projects, and inventory systems. The population of the study included all 136 school divisions of the state, with a total of 121 divisions responding. The findings show that a high percentage of systems have an up-to-date capital improvement program in place and that these programs are concurrent with the state mandated, long-range plan approved by the school board. For the year under study, it is estimated that maintenance costs will consume approximately $200 million dollars. This represents only half of the total projected need. If school divisions could bring all buildings up to the standard of the best school, then approximately $1.5 billion would be needed. Inventory monitoring seems important in all districts, with 92 percent of school divisions keeping an up-to-date inventory. Six recommendations for school facilities are offered. (RJM)

SURVEY OF SCHOOL FACILITY EXPENDITURES IN VIRGINIA

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SCHOOL FACILITIES STATUS IN VIRGINIA

INTRODUCTION

Over the past few years, a great deal of attention has been given to the physical condition of the public school buildings in this country. This attention has been concurrent with the numerous reports on public education. At the same time, however, the condition of the school facilities has been secondary to the main thrust of these reports on what needs to be done to and for the public educational program. Understandably, people in all walks of life and in various responsibilities have been more concerned about the programs that are carried on in the school facilities than in the space where the instructional/learning program takes place.

Educators who have worked in both good and poor facilities can emphatically attest to the need for buildings that will adequately support the educational programs that the school division offers. In addition to the empirical evidence from practitioners of building effect upon the learners, there is sufficient research findings to support the fact that facilities do in fact have an impact upon the effectiveness of the instructional program (McGuffey, 1982;Edwards, 1991). In spite of these evidences, educators are so many times forced to house students in facilities that no longer fit the educational program or in buildings that are not in a good state of repair. Oftentimes the reason for this is the lack of adequate funds to correct the situation.

In 1989, a report on the condition of public school buildings was published (Educational Writers Association, 1989). This report indicated approximately $41 billion will be needed for deferred maintenance and major repair of existing buildings and an additional $84 billion for new construction and retrofitting of older buildings, for a total of $125 billion. The results of the investigation are not different from a 1983 investigation by the American Association of School Administrators, but more current (AASA, 1983). The same dismal story of maintenance backlogs and lack of funds was told by the EWA report as was cited by the earlier AASA report.

Some of the data used in the EWA analysis were obtained through a survey of state departments of education. The office responsible for school facilities in each state department was contacted by the EWA for data regarding condition of school buildings, the amount of maintenance funds needed and available and planning capability of localities. Only 28 of the 50 states plus the District of Columbia responded to the survey, resulting in a 55 percent return. A rate of return this low does not ordinarily inspire a great deal of confidence in the returns, however, the main thrust of the report was based upon available data obtained through means other than a survey. Needless to say, the credibility of the report is in no way compromised by the small return on one aspect of the entire study. One of the states that did not respond to the survey used in the study was Virginia. As a result, aggregate knowledge about the condition of the schools in Virginia is still not available.

DESCRIPTION OF THE SURVEY

To determine the scope of funding for the facility needs of the public schools in Virginia, a descriptive study was mounted. As a response to the proposed study, a survey instrument was developed to obtain data on several phases of school facilities in the Commonwealth. The instrument that was developed for the study contained 26 separate items to which local school personnel were asked to respond. These items were grouped around three main parts of the study: Capital improvement Projects, Maintenance Projects and Inventory Systems. The survey instrument was submitted to four experts in the field of facility planning for validation and critique.

The population of the study was all 136 school divisions of the Commonwealth. A total of 121 school divisions actually responded with a completed survey instrument. This represented a 92 percent return.

FINDINGS OF THE SURVEY

School division personnel throughout the Commonwealth exhibit a great deal of planning expertise in housing the students of the local school systems. This was demonstrated by the fact that a high percentage of systems have an up-to-date capital improvement program in place and it is concurrent with the state mandated long range plan approved by the school board. Obviously, the school divisions with the greatest need for new facilities or building improvements have the greatest planning demand and a resultant

staff to take care of those needs. It is the small school division that lacks planning expertise on the staff. Regardless of the size of staff in the local school divisions, there is a reported $2.17 billion in anticipated capital construction projects in the state. This amounts to about $2226.00 for each student enrolled in the reporting school divisions of the Commonwealth. The range of spending for capital improvement projects is from $4426.21 to $2.16 per pupil.

Virginia does not have any program of cost-sharing for the construction of local school facilities. As a result, the local school divisions must use funds from either the county or city to construct school facilities. Only 14 percent of the reported $1.15 billion of capital funds used came from the Literary Loan Fund of the Commonwealth. Of course, these funds must be repaid from local funds. This means that school boards are entirely dependent upon the wealth of the local governmental unit to provide adequate school housing for students. This situation alone is the cause of a great disparity between the quality and numbers of school facilities available to educate youngsters throughout the Commonwealth.

Maintenance funds are used to keep an existing building in a state of good repair. Maintenance projects can vary from replacement of floor tile to replacement of an entire roof. The amount of maintenance funds available to the school board is a measure of the condition of the buildings and the desire to keep the structures in good condition. The results of the responses on

the amount of funds needed for maintenance is contained in the following table.

Table I
Maintenance Funds Needed

Time frame	Amount of Funds
For academic year 1990-91	$200,010,700
For total maintenance needs	$400,692,100
Bring buildings up to standard	$1,465.167,600

For the current academic year approximately $200 million will be expended for maintenance of buildings. On a per pupil cost basis, the range for such expenditures is from $4451,68 in King and Queen County to a low of $ .16 in Halifax County. For the total projected maintenance needs, approximately $400 million will be needed and if school divisions could bring all buildings up to the standard of the best school in the division, approximately $1.5 billion would be needed. Although these amounts may seem large in totality, on a per pupil basis, they are very small -- $209.00 per year for requested maintenance needs; $418.70 for a 6 year period; $1,521.60 for all maintenance needs to bring every facility in the school division to the standard for the best school building. If the state were to fund the maintenance needs of every school division, the cost per pupil would be indeed small; however, these funds are reported on a local school division basis and the need

is not evenly distributed among the school divisions. Again, these funds are from local resources only and the wealth of the locality then plays a big part in the availability of such funds.

Many factors impinge upon the amount of funds allocated to local school maintenance projects, the most important one is the political power structure in evidence in the local school division. No matter how forceful and thorough the school administration and school board are in their request for funding, in Virginia, the local governing body makes the final decision. The Board of Supervisors or City Council is the political body charged with the responsibility of levying taxes and allocating funds to the various local agencies including the schools. As a result, this body is very sensitive to the limits of taxation they believe the citizenry will permit. Oftentimes the local governing body finds the maintenance portion of the school budget convenient to reduce to stay with the limits of acceptable taxation. When this happens regularly, the buildings deteriorate to dangerous proportions long before the end of the useful life of the building is reached.

Because Virginia has contrasting geographic regions with varying degrees of assets and resources, it was decided to investigate the degree to which this had a bearing upon the maintenance needs. In order to determine the amount of variance caused by the location of the school division in relationship to the amount of maintenance funds needed, a one-way analysis of variance was conducted. The state was divided into five regions: southwest, northern, central, peninsula/eastern shore, and

southeastern. The latter region included Richmond and the neighboring counties of Hanover, Henrico, and Chesterfield. An ANOVA was run for each of these regions using the three estimates of maintenance funds needed -- for one year, to complete the six year program, and funds to bring all schools up to standard. In each case, a significant ($p < .01$) F ratio was found indicating the location of the school division was significantly associated with the amount of funds estimated by school personnel. This was hardly surprising because the number of students and, therefore, the number of school buildings is also directly related to the location of the school division itself. Obviously, the estimates for the largest amounts of funds were located in the northern and southeastern regions which also contain the school divisions with the most growth in student population. The analysis simply confirmed what was known before.

Many school divisions report having a preventative maintenance program in existence but these programs do not cover some of the more basic elements of the building. The greatest number of programs cover the heating system. Coverage is not uniform in spite of the fact that a preventative maintenance program is crucial to the well-functioning of a building.

School division personnel are dealing with several environmental problems in buildings. Approximately 82 percent of the reporting school divisions indicated asbestos removal is still a problem. Other problems such as radon gas, underground storage tanks and lead in drinking water are still concerns for a large number of school divisions.

The third area of investigation dealt with school building inventories. At one time, school divisions were required by law to maintain such an inventory. Presently, maintaining an up-to-date local school building inventory is a local concern for the school division, in spite of legal mandates. In spite of this, over 92 percent of the school divisions keep an up-to-date inventory. Only 31.8 percent of the school divisions have computerized the inventory, which means only the large school systems have done it. This is also indicative of the fact that school divisions with a substantial building program are the ones that actually maintain a computerized inventory and use it in planning.

RECOMMENDATIONS

Because of the heavy reliance upon local funds to finance both the capital improvement and maintenance needs of the school division, there is a disparity in effort between the wealthy and poor school divisions. This disparity can also result because of a difference in philosophical beliefs concerning the expenditure of local tax dollars, but for the most part, school divisions with limited taxing ability are the ones that have the greatest need for assistance in housing students in adequate facilities. In the absence of outside assistance, many school divisions can not provide the type of safe housing that a modern educational program demands.

1. <u>The state legislature should initiate a study to determine the best method for assisting school</u>

Board of Education. Distribution of the funds should be on a need basis with a local effort factor. All school divisions should qualify for some assistance based upon the wealth, need and effort of the locality.

This fund should be capitalized at approximately $100 million each year for the next five years. The difference between the $790 million needed for up-dating of all school facilities and the $500 million of proposed state funds would come from local sources. The $100 million would represent only about $100.00 per pupil each year for five years in state funds. With the current economic down-turn, the economy of the state would be enhanced with the investment of $100 million per year for maintenance projects in all parts of the state. Without this type of encouragement, many of the less wealthy school divisions will continue to defer maintenance projects until the costs are much higher than at present.

3. **The State Board of Education should assist all school divisions in establishing and maintaining a viable preventative maintenance program.**

All school divisions could benefit from a comprehensive preventative maintenance program that includes all systems of each building. Evidence shows that only about half of the school divisions have such a program. Further, with the exception of large school systems, the preventative maintenance program in small school divisions does not cover essential components of the building. The State Board of Education through the Department of Education could encourage local school division personnel to

either expand the existing program or establish a new program through workshops and technical assistance programs. Without this type of assistance, local school divisions may not see the wisdom of such a comprehensive program and not implement it.

4. **The State Board of Education should initiate a study to develop a computerized, uniform school building inventory system to be used in all school divisions.**

Although 92 percent of the school divisions maintain a school building inventory, few are computerized. Some inventories are simply a listing of the school building with only the most meager data recorded. Such an inventory is of little use when trying to make decisions as to what building the various students should attend, changes in bus routes, or similar management decisions. The benefits of a computerized system that is uniform throughout the state are many. If an inventory system can provide better data, then better decisions can be made. A computerized inventory can be maintained up-to-date at less cost than a manual system and it can be more accurate in the data stored.

5. **The State Board of Education should strengthen the Energy and Facilities Section of the State Department of Education to assist in the provisions of extended services to local school divisions as called for in this report.**

For many years the Energy and Facilities Section of the State Department of Education has been the office responsible for reviewing the architectural plans for new construction, renovations and improvements in accordance with state law. As beneficial as

this service is to most of the school divisions, it is perceived as an interference by the largest school divisions. On the other hand, this service of review has been very beneficial for smaller school divisions. The state department of education staff has acted in the past as a sort of adjunct to the school staff in reviewing architectural plans and drawings. Such service should continue for those school divisions that need it; larger school systems with architectural review expertise might be exempt. Nevertheless, if the state is to share in the funding of capital improvements and perhaps maintenance projects, this section of the department of education should be strengthened to service the school divisions adequately.

6. **The State Board of Education should provide leadership in strengthening the school facility planning capability of local school divisions by establishing a planning methodology for all capital projects.**

Many school systems simply do not know how to plan school facilities. As a result, planning of facilities is oftentimes done by non-educators for educators rather than the educators actually guiding and administering the planning process. The local school division personnel should recognize the planning responsibilities incumbent upon them and should be knowledgeable about how to discharge them. If, however, the local planning methodology is left to the discretion of a superintendent who is perhaps not knowledgeable about physical planning efforts or a person who does not have a planning staff to properly assist, the degree of planning will not improve. The State Board of Education

should, therefore, promote an enlightened planning methodology and hold staff development activities in local school divisions to disseminate such. Through a definition of appropriate planning methodology and staff development activities to insure its use, the planning of facilities could improve measurably throughout the Commonwealth.

APPENDIX

STATE GROUPINGS OF SCHOOL DIVISIONS

The state was divided into five regions to determine if any differences in criterion variables existed across locations within the state. The regions were defined as follows:

Region 1 - Southwestern Virginia, including all counties west of Bath, Rockbridge, Amherst, Appomatax, Campbell and Pittsylvania

Region 2 - Northern Virginia, including the counties of Frederick, Clarke, Warren, Fauquier, Stafford, Prince William, Loudon, Fairfax and Arlington

Region 3 - Central Virginia, including all counties between

Region 4 - Peninsula and Eastern Shore, south to include to

Region 5 - Southeastern Virginia, including Richmond and the

ANALYSIS OF VARIANCE RESULTS

In Table IIa are the results of a one-way analysis of variance of districts' estimates of total maintenance needs across the state regions.

Table IIa

ANOVA Results of Division Estimates of Total Maintenance Needs Across Regions

Source of Variation	Sum of Squares	df	Mean Square	F
Region	5.97	4	1.49	3.55*
Residual	4.16	99	4.20	
Total	4.76	103		

* $p < .01$

A significant ($p < .01$) F ratio was found in the ANOVA results on the estimates of total maintenance needs. This result indicates that the districts' location is significantly associated with the amount of funds estimated to be required for maintenance needs.

Table IIb

Group Means and Standard Errors for Division Estimates of Total Maintenance Needs Across Regions

Regions	Means	Standard Errors
1	$\bar{x}$ = 2484985	1080788
	N = 36	
2	$\bar{x}$ = 7158481	1798539
	N = 13	
3	$\bar{x}$ = 1648309	1164691
	N = 31	
4	$\bar{x}$ = 2136088	1871979
	N = 12	
5	$\bar{x}$ = 8137518	1871979
	N = 12	

Region 5 appears to have the highest mean while Region 3 appears to have the lowest mean.

Table IIIa contains the ANOVA results of the analysis of the division estimates of needed maintenance funds for the 1990-91 school year across state regions.

Table IIIa

ANOVA Results of the Division Estimates of Needed Maintenance Funds for 1990-91 Across the Regions

Source of Variation	Sum of Squares	df	Mean Square	F
Region	6.50	4	1.62	4.65*
Residual	4.16	99	4.20	
Total	4.76	103		

* $p < .01$

A second significant relationship was found involving the state regions. The above summary shows the division estimates of funds required for the current school year are significantly affected by the regions in which they are located ($p < .01$).

Table IIIb

Group Means and Variances for Division Estimates of Needed Maintenance Funds for 1990-91 Across the Regions

Regions	Means	Standard Errors
1	x = 1239668	303275.1
	N = 38	
2	x = 3174678	499648.5
	N = 14	
3	x = 961562.7	320618.9
	N = 34	
4	x = 792084.1	482706.3
	N = 15	
5	x = 2117526	467378.4
	N = 16	

Region 3 appears to have the largest mean and Region 1 appears to have the smallest mean.

19

In Table IVa is shown the third one-way analysis of variance. The region in which a division is located is significantly associated with the total dollar amount of the complete Capital Improvement Program.

Table IVa

ANOVA Results of the Division Amount of Complete Capital Improvement Program Across the Regions

Source of Variation	Sum of Squares	df	Mean Square	F
Region	1.22	4	3.05	3.23*
Residual	6.99	74	9.44	
Total	8.21	78		

* $p < .01$

Table IVb

Group Means and Variances for Division Amount of

Complete Capital Improvement Program Across the Regions

Regions	Means	Standard Errors
1	x = 6047422	6553881
	N = 22	
2	x = 36422000	8525860
	N = 13	
3	x = 12567000	7455648
	N = 17	
4	x = 15330000	9266587
	N = 11	
5	x = 34262000	7685107
	N = 16	

Region 2 appears to have the highest mean while Region 1 appears to have the lowest mean.

21

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